AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS

Claims 1-13 (canceled)

14. (currently amended) A method for ~~the detection of~~ determining an organisms~~ by a sensor~~, the method comprising assaying a plurality of enzymes with a plurality of sensors to determine a suite of enzymes expressed by the organism, and thus determining said organism; each of said plurality of sensors ~~the sensor~~ comprising a substrate; at least one electrode; a sol gel matrix comprising[;]: at least one sol-gel enzyme; at least one reactant; and at least one transducer material; wherein (a) an organism expresses an organism-enzyme on the surface of the sensor; (b) the organism-enzyme causes a reaction with the reactant of the sensor; (c) the product according to process step (b) reacts further as catalyzed by said sol-gel enzyme of the sensor; (d) the products of process step (c) modulate at least one property of the transducer material; (e) the modulated property is measured.

15. (currently amended) The method according to claim 14, wherein the expressed organism-enzyme is selected from the group consisting of tryptophanase, gelatinase, β-lactamase, catalase, casease, citrase, decarboxylase, deoxyribonuclease, lipase, nitrate reductase, β-galactosidase, cytochrome oxidase, phenylalanine deaminase, 1-

pyrrolidonyl arylamidase, cystein desulfase, urease, L-asparaginase, glutamate dehydrogenase, organphosphorus hydrolase, acetylcholinesterase, and α-amylase.

16. (original) The method of claim 14, wherein said product of process step (c) is selected from the group consisting of lactic acid, carbon dioxide, hydrogen, ethanol, acetic acid, succinic acid, gluconic acid, and formic acid.

17. (currently amended) The method according to claim 14, wherein (a) the organism-enzyme is ~~an organism expresses~~ α-amylase; (b) α-amylase catalyzes the hydrolysis of starch to form glucose; (c) glucose oxidation is catalyzed by the at least one sol-gel enzyme, glucose oxidase to form gluconic acid and H_2O_2; (d) gluconic acid and H_2O_2 modulate the electrical resistance of an inherently conductive polymer, or transducer material; (e) the modulated electrical resistance of the inherently conductive polymer, or transducer material is measured with a voltage source and ohmmeter.

18. (previously presented) The method of claim 14, wherein the sensor comprises at least one pair of electrodes.

19. (previously presented) The method of claim 14, wherein the substrate is selected from the group consisting of glass, ceramic, and plastic.

20. (previously presented) The method of claim 18, wherein said electrodes comprise one or more elements selected from the group consisting of polyaniline, polythiophenes, polyacetylenes, polypyrroles, and combinations thereof.

21. (previously presented) The method of claim 18, wherein said electrodes are interdigitated.

22. (previously presented) The method of claim 14, wherein said sol gel matrix covers the substrate and the electrodes.

23. (previously presented) The method of claim 14, wherein said sol gel matrix is an encapsulating sol gel, said encapsulating sol gel matrix comprising at least one organosilane, which can be tetrafunctional, like tetramethoxy orthosilicate, trifunctional, like methyltrimethoxysilane, octadecyltrichlorosilane, octadecyltriethoxysilane, phenyltrimethoxysilane and 1,4-bis(trimethoxysilylethyl)benzene, or difunctional, like methyldimethoxysilane, dimethyldiethoxysilane, or monofunctional, like octadecyldimethylmethoxysilane, or derivatized silanes, like 2-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, 3-aminopropyltrimethoxsilyane, 4-aminobutyldimethoxysilane, N-(2-aminoethyl)-3-aminopropylmethyldimethoxysilane, 5-(bicycloheptenyl)-triethoxysilane, dicyclohexyldimethoxysilane and 3-glycidylpropyltrimethoxysilane.

24. (currently amended) The method of claim 14, wherein said sol gel matrix encapsulates said at least one sol-gel enzyme.

25. (currently amended) The method of claim 14, wherein said at least one sol-gel enzyme is selected from the group consisting of tryptophanase, gelatinase, β -lactamase, catalase, casease, citrase, decarboxylase, deoxyribonuclease, lipase, nitrate reductase, β-galactosidase, cytochrome oxidase, phenylalanine deaminase, 1-pyrrolidonyl arylamidase, cystein desulfase, urease, L-asparaginase, glutamate dehydrogenase,

organphosphorus hydrolase, acetylcholinesterase, α-amylase and ~~is preferably~~ glucose oxidase.

26. (previously presented) The method of claim 14, wherein said transducer material and said reactant are dispersed in said sol gel matrix.

27. (previously presented) The method of claim 14, wherein said reactant is starch containing amylose.

28. (previously presented) The method of claim 14, wherein said transducer material is a polymer.

29. (previously presented) The method of claim 28, wherein said polymer is a water soluble polymer.

30. (previously presented) The method of claim 29, wherein said water-soluble polymer is selected from the group consisting of polyaniline, polythiophenes, polyacetylenes, polypyrroles, and combinations thereof.

31. (previously presented) The method of claim 18, wherein said electrodes comprise one or more inherently conductive polymers and combinations thereof.

32. (previously presented) The method of claim 14, wherein said sol gel matrix is an encapsulating sol gel matrix, said encapsulating sol gel matrix comprises at least one organosilane.